

DTIC FILE COPY

USAFA-TR-90-7

3

AD-A228 794

**SCIENTIFIC EVIDENCE IN COURTS-MARTIAL:
FROM THE GENERAL ACCEPTANCE STANDARD TO
THE RELEVANCY APPROACH**

**MAJOR MICHAEL N. SCHMITT
CAPTAIN STEVEN A. HATFIELD**

**DEPARTMENT OF LAW
USAF ACADEMY, COLORADO 80840**

JULY 1990

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED



**DTIC
ELECTE
OCT 15 1990**
S B D

**DEAN OF THE FACULTY
UNITED STATES AIR FORCE ACADEMY
COLORADO 80840**

**Technical Review by Colonel Richard R. Lee
Department of Law
USAF Academy, Colorado 80840**

**Technical Review by Colonel Jeffrey M. Graham
Staff Judge Advocate
USAF Academy, Colorado 80840**

**Editorial Review by Lt Col Donald C. Anderson
Department of English
USAF Academy, Colorado 80840**

This research report is presented as a competent treatment of the subject, worthy of publication. The United States Air Force Academy vouches for the quality of the research, without necessarily endorsing the opinions and conclusions of the author.

This report has been cleared for open publication and public release by the appropriate Office of Information in accordance with AFM 190-1, AFR 12-30, and AFR 80-3. This report may have unlimited distribution to the public at large, or by DDC to the National Technical Information Service.

A handwritten signature in cursive script that reads "Richard Durham".

RICHARD DURHAM, Lt Col, USAF
Director of Research

SCIENTIFIC EVIDENCE IN COURTS-MARTIAL: FROM THE GENERAL ACCEPTANCE STANDARD TO THE RELEVANCY APPROACH

In courts-martial today, the use of a wide variety of scientific evidence has become routine. Fingerprinting and blood typing indicate identity. Recent drug usage and intoxication are proven by chemical analysis of blood and urine.¹ Evidence of sexual assault or child abuse can be obtained by behavioral analysis of the victim and presented as rape trauma or battered child syndrome.² Truthfulness, or the lack thereof, can theoretically be demonstrated by polygraph examinations as a matter of law.³

The use of other, newer types of scientific evidence may someday become just as routine.⁴ It appears that identity can now be proven to nearly a mathematical certainty using DNA analysis.⁵ The use of radioimmunoassay analysis of hair suggests that drug usage can be detected for months, even years, after ingestion.⁶ As science advances, ever more creative means of producing evidence will undoubtedly be developed.

In recent years the standard for the admissibility of scientific evidence in courts-martial has undergone significant change. This change can be described as the replacement of the general acceptance standard with the relevancy approach. The purpose of this article is to examine the development and acceptance of the relevancy approach in the federal and military courts, analyze its meaning, and attempt to provide a working model for its application in courts-martial. However, before turning to that approach, it is necessary to understand its predecessor, the general acceptance standard. As will be seen, the underlying rationale for the general acceptance theory remains a consideration under the relevancy approach.

The General Acceptance Test

Since 1923, the admissibility of novel scientific evidence in federal, state and military courts has been governed almost exclusively by the rule articulated in *Frye v. United States*.⁷ In that case, the federal District

1. *United States v. Ford*, 4 U.S.C.M.A. 611, 16 C.M.R. 185 (1954). Analysis of blood and urine only detects recent drug abuse because chemical evidence of drugs and alcohol in bodily fluids dissipates rather rapidly depending on the drug, the amount used, and the metabolism of the individual.

2. *E.g.*, *United States v. Carter*, 26 M.J. 428 (C.M.A. 1988) and *United States v. White*, 23 M.J. 84 (C.M.A. 1986).

3. *See, e.g.*, *United States v. Gipson*, 24 M.J. 246 (C.M.A. 1987) and *United States v. Abeyta*, 25 M.J. 97 (1987). Assuming the polygraph examination was administered by a Department of Defense or similarly certified polygrapher, the questions asked at the examination were relevant, and the subject of the test testifies at trial, there should theoretically be no barrier to the admissibility of the polygrapher's testimony.

4. Evidence derived from scientific techniques which are neither judicially noticed as a matter of course, nor rejected out of hand as unreliable, is deemed "novel."

5. For a discussion of DNA evidence in the military context, see Schmitt and Crocker, *DNA Typing: Novel Scientific Evidence in the Military Courts*, 32 A.F.L. Rev. 227 (1990). Much of the substance of the instant piece results from research and writing accomplished while producing that article. For an interesting article arguing that DNA profiling is currently scientifically unreliable, see Hoefel, *The Dark Side of DNA Profiling: Unreliable Scientific Evidence Meets the Criminal Defendant*, 42 Stan. L. Rev. 465 (1990).

6. Drug analysis of hair has been used in the following cases: *People v. Robert Korner*, No. 154558, Santa Barbara Superior Court, 1985 and *People v. Mart Miel*, No. 804003, Los Angeles Superior Court, 1985. The authors are unaware of any appellate case which has reviewed this type of evidence. The technique used in the analysis of hair, radioimmunoassay, is nearly identical to that used in urinalysis. The underlying theory is that as the blood circulates through the body the metabolites, or by-products created when the body breaks down a particular drug, are stored in the hairs of the body. As the hair grows the chemical evidence remains within. Thus, depending on the length of the hair being analyzed, a record of drug ingestion may be determined which covers several months or even longer.

7. 293 F. 1013 (D.C. Cir. 1923).

Court for the District of Columbia considered the admissibility of evidence derived from a crude forerunner of the polygraph. Whereas the modern polygraph measures several different physiological responses of the subject being tested, the device under scrutiny in *Frye* was a "monograph" which measured only blood pressure. Finding the test to be a novel scientific technique, the court enunciated a standard of admissibility in a brief, two-page opinion that would provide a basic framework for the analysis of scientific evidence in the courts of the United States for the next 60 years. That standard was announced as follows:

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in the twilight zone, the evidential force of the principle must be recognized and while the courts will go a long way in admitting expert testimony deduced from a well recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained *general acceptance* in the particular field to which it belongs.⁸

The court then held that the evidence in question was inadmissible as the "lie detector" that was employed had "not yet gained such standing and scientific recognition among physiological and psychological authorities."⁹

The *Frye* court did not cite authority for the general acceptance standard nor set forth a rationale for it. Despite that fact, it was initially accepted without question. Only years later, when the standard began to be questioned, did courts begin to defend its application in any comprehensive manner.¹⁰ Several arguments in support of general acceptance were recurrently offered. The reason most often mentioned was the necessity of insuring that evidence upon which a jury based its decision was reliable. The issue of reliability was, and still is, seen as especially important in the area of scientific evidence because whereas the judge or jury may have at least some innate ability to evaluate the testimony of lay witnesses, in all likelihood they probably do not have commensurate ability with regard to the complexities of science. This relative inability to critically assess scientific evidence is compounded by a concern that science in the twentieth century, albeit ever more incomprehensible to the layman, has taken on an aura of "mystic infallibility."¹¹

Thus, the primary reason for requiring general acceptance by experts in the particular field to which the evidence belongs is to address the potential for confusion in the face of seemingly infallible scientific evidence and provide a method for determining its reliability. What the general acceptance standard does is supplant judges and lay juries with a "scientific jury" when issues of scientific reliability arise.¹² This approach is premised on the not unreasonable view that scientists are best able to assess science. Assuming the particular evidence passes muster in the scientific community, the fact-finder need only determine the appropriate weight it is to be given.¹³ Weight issues do fall within the natural purview of the fact-finder for they center on such concepts as credibility and depend, as do most factual matters, on the effectiveness of litigators. Thus, asking jurors to handle such issues is consistent with all other tasks the judicial system demands of them. Additional

8. *Id.* at 1014 (emphasis added).

9. *Id.*

10. See, e.g., *United States v. Addison*, 498 F.2d 741 (D.C. Cir. 1971).

11. In the words of the D.C. Circuit, "scientific proof may in some instances assume a posture of mystic infallibility in the eyes of a jury of layman. . . ." *Id.* at 744. As shall be seen, this paternalistic attitude toward the jury is an aspect of the *Frye* test that has been attacked by opponents. See *infra* note 51 for a discussion of this point.

12. See Black, *A Unified Theory of Scientific Evidence*, 56 Fordham L. Rev. 595, 636-637 (1988), for a discussion of this issue.

13. Despite concerns about the "mystic infallibility" of scientific evidence, it should be remembered that the jury is free to assign whatever weight it feels is appropriate to any piece of evidence. Indeed, the jury is even free to completely disregard it. That scientific evidence is often disregarded, or at least not completely relied upon, should be clear to any counsel who has participated in a urinalysis case that resulted in acquittal. Interestingly, it might be argued that "mystic infallibility" could pose a greater danger in the military. In that virtually all officers have college degrees, court members are likely to have been exposed to the "potential of science." Thus, though science will not seem as mystic, it may seem more infallible. The contrary might be true of individuals who lack the education of the average military court member.

justifications for the *Frye* test include insuring the existence of a "reserve of experts . . . who can critically examine the validity of a scientific determination in a particular case"¹⁴ and promoting "uniformity of decision."¹⁵

The *Frye* standard received almost universal acceptance despite the fact that application of the standard is not without problems. For instance, some scientific evidence cannot be conveniently ascribed to a particular field of study to determine acceptance as it may be the product of an interdisciplinary approach. Must such evidence be generally accepted by all fields which somehow have contributed to its existence?¹⁶

Perhaps an even more troubling issue raised by the general acceptance approach is whether it is the *principle* or the *technique* employed in the creation of the scientific evidence which must be generally accepted.¹⁷ A review of the *Frye* decision reveals that the court was concerned almost exclusively with the principle involved. Specifically, it found that there was no generally accepted nexus between variations in blood pressure and deception.¹⁸ However, in subsequent years many courts deviated from the precise holding in *Frye* and required general acceptance of the technique employing the principle.¹⁹ Other controversies arising as a result of the failure of the *Frye* court to provide a comprehensive analytical framework include the parameters of the term "acceptance,"²⁰ how narrowly or broadly the relevant field from which general acceptance is sought is to be defined,²¹ what is necessary to qualify as an expert²², and how general acceptance is to be proven.²³

14. *Addison*, 498 F.2d at 744.

15. *People v. Kelly*, 17 Cal. 3d 24, 31, 549 P.2d 1240, 1245 (1976).

16. One court using the *Frye* standard to analyze voiceprint evidence noted, "[c]ommunication by speech does not fall within any one established category of science. Its understanding requires a knowledge of anatomy, physiology, physics, psychology, and linguistics." *People v. King*, 266 Cal. App. 437, 456, 72 Cal. Rptr. 478, 490 (1968).

17. The term "principle" applies to the scientific rules or theories relied upon by scientists in developing the evidence. The term "technique" refers to the means by which the principle is applied. For instance, polygraphy is based on the principle that conscious deception causes physiological stress which can be measured. The actual measurement of the physiological changes by the polygraph itself, and the formulation of an opinion by the examiner, is the technique by which the principle is applied.

18. See generally *Frye*, 293 F. 1013. Of course, this point begs the question of whether the court would have subsequently inquired into the reliability of the technique if the principle involved had been deemed generally accepted.

19. *Seattle v. Peterson*, 39 Wash. App. 524, 693 P.2d 757 (1985). In this case the court specifically noted that the principle underlying the Doppler radar speed detector was not at issue. Instead, the issue was whether the machine itself and the results it produced were reliable.

20. Contrast *United States v. Gould*, 741 F.2d 45, 49 (4th Cir. 1984), where the court required "substantial acceptance" with *People v. Guerra*, 37 Cal. 3d 385, 690 P.2d 635, 656 (1984) where a "clear majority" was needed. One thing is for certain: general acceptance requires more than a single individual. "You cannot accept a technique simply because the Nobel Prize winner takes the stand and testifies, 'I have verified this theory to my satisfaction, and I stake my professional credentials on the theory.'" Imwinkelried, *The Standard for Admitting Scientific Evidence: A Critique from the Perspective of Juror Psychology*, 100 Mil. L. Rev. 99, 104 (1983).

21. In considering scientific evidence using the *Frye* test, this issue is critical. Defining the field too narrowly could result in an insufficient number of experts to convince a court that general acceptance existed. For example, in assessing DNA evidence, should the field be defined as genetics, population genetics or forensic DNA analysis?

22. A major issue in this regard is whether technicians should be able to testify as well as scientists. Some courts recognize that technicians may be in the best position to determine the reliability of the technique involved in the creation of scientific evidence while other courts have taken a more restrictive view. Compare *People v. Young*, 391 N.W. 2d 270 (Mich. 1986) with *People v. Reilly*, 196 Cal. App. 3d 1127 (1987).

23. The three generally accepted methods of proof are expert testimony, scientific and legal writings, and judicial opinions. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, A Half Century Later*, 80 Colum. L. Rev. 1197, 1215 (1980).

For

&I

ed

tion

Distribution/

Availability Codes

Dist

A-1

Avail and/or
Special



***Frye* Reconsidered**

As previously noted, *Frye* was initially accepted without question. However, as time passed the general acceptance standard came under greater scrutiny. In part, this is attributable to the increasingly important role that scientific evidence has assumed in recent years.²⁴ As the raw number of cases involving such evidence grew, it was inevitable that pitfalls in the standard would become more apparent. Nevertheless, despite a trend towards rejecting the seeming "mystic infallibility" of *Frye* itself, the general acceptance standard remains the standard of admissibility in a majority of jurisdictions.²⁵

An opportunity to reassess the standard presented itself in the guise of the Federal Rules of Evidence (Fed. R. Evid.)²⁶, signed by President Ford on January 2, 1975. Specifically, it was Fed. R. Evid. 702 (Testimony by Experts)²⁷ which was to open the door to a new approach. Though the general acceptance standard had been dogma for some 52 years, inclusion of the standard, or any clearly analogous counterpart, was conspicuous by its absence. Indeed, despite the established position of *Frye* as the lead case in the area of novel scientific evidence, it was not mentioned at all in the analysis of the rule.²⁸ To compound this lack of guidance, the Advisory Committee's Notes did not address the issue of whether the general acceptance standard survived promulgation of the rules.²⁹ The significance of these omissions would soon become apparent to scholars and practitioners alike. Was the standard so accepted as to be assumed part and parcel of Fed. R. Evid. 702³⁰ or did

24. The emergence of scientific evidence in criminal trials has been, according to some, the indirect result of cases like *United States v. Wade*, 388 U.S. 218 (1967) and *Miranda v. Arizona*, 384 U.S. 436 (1966). Those cases restricted the methods that police traditionally used to obtain evidence, such as interrogations and line-ups. Giannelli, *supra* note 23, at 1199. These judicially created restrictions on police activity forced law enforcement officials to seek out new means of establishing guilt. Scientific evidence became popular because it can generally be obtained with far less intrusion on personal privacy than those methods found unconstitutional by the Supreme Court.

25. Examples of federal cases adhering to the *Frye* standard include *Barrel of Fun, Inc. v. State Farm and Fire Casualty Co.*, 739 F.2d 1028 (5th Cir. 1984), *United States v. Distler*, 671 F.2d 954 (6th Cir.), *cert. denied*, 454 U.S. 827 (1981), *United States v. Tranowski*, 659 F.2d 750 (7th Cir. 1981), and *United States v. McDaniel*, 538 F.2d 408 (D.C. Cir. 1976). In *United States v. McBride*, 786 F.2d 45 (2d Cir. 1986), the *Frye* standard was used to overturn a lower court's ruling which had excluded scientific evidence. In that case, the trial judge did not allow testimony of a psychiatrist that, due to a brain injury, the defendant could not have formed the requisite specific intent to commit the crime. Apparently, the trial judge determined that the type of evidence proffered had not gained general acceptance for he noted that "psychiatry was still in its infancy." *Id.* at 50. The appellate court disagreed and overturned the decision. What is interesting about this case is that it raises the issue of whether an appellate court should overturn a trial court's decision on general acceptance when, as a result of further testing and experience, scientific evidence actually does become generally accepted in the interval between the decisions of the trial court and the appellate court. Since a district court judge has broad discretion with regard to the admissibility of expert testimony, *id.* at 49, an appellate court would presumably base its decision only on the degree of acceptance which existed at the time of the trial judge's decision even if the scientific evidence had gained more acceptance, even general acceptance, by the time it made its decision. If law is, indeed, a search for truth, this is probably an unacceptable result.

26. Pub. L. No. 93-595, 88 Stat. 1926 et seq.

27. Fed. R. Evid. 702: If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill experience, training or education, may testify thereto in the form of an opinion or otherwise.

28. Drafter's Analysis, Fed. R. Evid.

29. Advisory Committee Notes, Fed. R. Evid.

30. Though Professors Saltzburg and Redden note that "[i]t would be odd if the Advisory Committee and the Congress intended to overrule the vast majority of cases excluding such evidence as lie detectors without explicitly stating so" (S. Saltzburg & K. Redden, *Federal Rules of Evidence Manual* 633 (4th ed. 1986)), it would be equally odd if the Committee and Congress intended to retain such a well-established standard without mentioning it or the case upon which it was based. By 1975, the general acceptance standard had been well and frequently articulated. An assertion that the standard set forth in Fed. R. Evid. 702 was an attempt on the part of the drafters to codify existing case law may be a bit hard to swallow.

An early case which struggled with the competing concerns about *Frye* is *United States v. Brown*, 557 F.2d 541 (6th Cir. 1977). Ultimately, the Sixth Circuit would elect to retain the general acceptance standard. At issue in *Brown* was

the omission indicate that the judicial standard set forth had been legislatively overruled?³¹ The foundation was laid for a schism in evidentiary law that continues even today.

In light of the theoretical and practical problems that had plagued the general acceptance standard, a number of jurisdictions chose to reject it in favor of a less demanding approach.³² That approach has come to be known as the "relevancy test." In essence, the test does away with the treatment of novel scientific evidence as a separate evidential category by treating it in very much the same fashion as other expert testimony.³³ Therefore, the emergence of the relevancy standard marked a retreat to the pre-Frye era of admissibility. Relevancy was a return to basics—arguably, a return of fact-finding to the fact finder.³⁴ Core evidentiary concepts such as probative value, prejudicial effect and reliability³⁵ would now serve to shape the admissibility inquiry.³⁶ This

the attempted admission of evidence based on ion microprobe analysis, a process which measures the element content of hair samples. Specifically, testimony relating to the source of three hairs found on a bottleneck at the site of a firebombing was challenged. The court began its analysis by noting the trend towards relaxed admission since the promulgation of Fed. R. Evid. 702. It further noted that general acceptance in the relevant scientific community is not a prerequisite to admissibility. However, the court then went on to address the countervailing right of the defendant to a fair trial: "[t]he fate of a defendant in a criminal prosecution should not hang on his ability to successfully rebut scientific evidence which bears an 'aura of special reliability and trustworthiness,' although, in reality the witness is testifying on the basis of an unproved hypothesis in an isolated experiment which has to yet gain general acceptance in its field." *Id.* at 556.

Given this analysis, would the court would have reached the same decision if the evidence had been offered to exonerate the accused? If the goal is protection of the accused, maybe the best approach is to tie the threshold degree of acceptance or reliability to which side is offering the evidence, i.e., grant the defense in a criminal trial a more relaxed standard. See *infra* note 152 for comment on this issue.

31. Professor Imwinkelried makes an interesting point in this regard by focusing on the language of Fed. R. Evid. 402: "All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible." Pointing out that "case law" is not one of the exceptions listed, he notes that the failure to mention the *Frye* standard in the text of 702 indicates the standard no longer exists. This result derives from application of basic rules of statutory construction and interpretation. Imwinkelried, *supra* note 20, at 105. However, such an approach might very well trivialize the role of precedent in our judicial system, as well as assume omniscience on the part of the Fed. R. Evid. draftsmen.

32. Though the relevancy standard is less demanding in terms of admissibility, it is certainly more demanding in terms of litigation. General acceptance requires little more than determining the make-up of your scientific jury and then polling it. Relevancy, as we shall see, involves the complex task of litigating the synergistic effect of multiple rules.

33. For example, consider the Fourth Circuit's approval of admission of spectrographic voice analysis evidence in *United States v. Baller*, 519 F.2d 463 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975). Addressing the standard of admissibility, the Fourth Circuit held that "[u]nless an exaggerated popular opinion of the accuracy of a particular technique makes its use prejudicial or likely to mislead the jury, it is better to admit relevant scientific evidence in the same manner as other expert testimony and allow its weight to be attacked by cross-examination and refutation." *Id.* at 466.

34. General acceptance allows the scientific community to determine reliability and, thereby, keep unreliable evidence from the jury. In contrast, the relevancy approach, with its lower standard of admissibility, permits the jury to hear evidence that the general acceptance standard would preclude and to make its own determination concerning reliability. This broadening of jury responsibility arguably results in a corresponding return of law to the "law-finder," i.e., the judge. The judge is now deemed responsible for making the sort of relevancy decisions familiar to him beyond the realm of novel scientific evidence. The sophisticated nose-counting called for under the general acceptance standard becomes only a peripheral activity for the judiciary.

35. These and other questions are the basis of the relevancy rules of evidence, Fed. R. Evid. and Mil. R. Evid. 401-403. Such questions are also the basis of the "helpfulness standard" found in the expert testimony rule, Fed. R. Evid. and Mil. R. Evid. 702. For a decision focusing on the degree of "help" evidence offers the fact-finder, see *United States v. Gwaltney*, 790 F.2d 1378 (9th Cir. 1986). The court held that the seminal issue was whether the jury could receive "appreciable help" from the evidence. *Id.* at 1381.

36. In *United States v. Williams*, 583 F.2d 1194, 1198 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979), the court noted that "probableness, materiality, and reliability of the evidence on one side, and any tendency to mislead, prejudice, or confuse the jury on the other, must be the focal points of inquiry." Spectrographic evidence was held to have been properly admitted.

is not to suggest that these concepts played no role in the general acceptance analysis. However, they were now to emerge from the background to supplant the non-legalistic inquiries of the "scientific jury."³⁷

*United States v. Downing*³⁸ would quickly become the lead case cited by relevancy advocates to exemplify their approach. The fact pattern of *Downing* is fascinating in and of itself. At issue in this fraud case was whether the defendant was a con man who had called himself "Reverend Claymore." Twelve eyewitnesses testified that the defendant and Reverend Claymore were one and the same. Backed into the proverbial corner, the defense called an expert witness on the unreliability of eyewitness testimony. Relying on the "helpfulness" standard of Fed. R. Evid. 702³⁹, the Third Circuit refused to permit the defense expert to take the stand.

A review of the opinion indicates that the court was clearly primed to reject *Frye* by relying on the text of the Federal Rules. As it recognized, the eight years since the promulgation of those rules had witnessed a plethora of suggestions on how novel scientific evidence should be treated. Among the possible approaches circulating at the time were: reasonable scientific acceptance⁴⁰; a preponderance standard for criminal defendants with a beyond a reasonable doubt standard for prosecutors⁴¹; established and recognized accuracy and reliability⁴²; and a relevancy/prejudice approach which shifts the inquiry to weight once relevancy is established^{43,44}. However, rather than adopting one of the new approaches that had become the focus of attention, the court chose to fashion its own analysis of the rules. This is not to suggest the court rejected the various alternatives out of hand. Instead, it noted the underlying considerations of those approaches and then looked to the Federal Rules of Evidence for resolution of the dispute. Indeed, even the *Frye* standard played some role in the court's new approach.

For the Third Circuit, the derivation of an appropriate standard was necessarily rooted in the broadness of the relevancy rules—Fed. R. Evid. 401-403. Under the rules, essentially all evidence is admissible unless it is irrelevant, unduly prejudicial or otherwise specifically excluded.⁴⁵ By contrast, evidence evaluated using the *Frye* standard could very well be excluded even if it was both relevant and unprejudicial. This would occur in situations in which the scientific community had not yet passed collective judgement on the process involved. Reduced to basics, the two approaches represent an inherent conflict between the search for truth and the goal of fairness in our legal system. If the goal is truth, then evidence having any bearing on the fact in issue should be admissible, so long as it is not so unreliable as to grossly mislead the fact-finders. The broadness of the relevancy rules clearly fosters this goal. Justice is safeguarded through litigation as to the appropriate weight to be given the evidence. On the other hand, the *Frye* approach searches for fairness. It is willing to sacrifice evidence that might be dispositive so as to preclude any possibility that unfair, i.e., scientifically unreliable, evidence might come before the fact-finders. Its safeguard is to be found in science, not law. As a result, the

37. The Second Circuit succinctly noted the shift in approach: "In testing for admissibility of a particular type of scientific evidence, whatever the scientific 'voting' pattern may be, the courts cannot . . . surrender to the scientists the responsibility for determining the reliability of that evidence." *Id.*

38. 753 F.2d 1224 (3d Cir. 1985).

39. *Id.* at 1226.

40. S. Saltzburg and K. Redden, Federal Rules of Evidence Manual 452 (3d ed. 1982).

41. Giannelli, *supra* note 23, at 1249-50.

42. *State v. Temple* 302 N.C. 1, 273 S.E.2d 273 (1981).

43. *United States v. Williams*, 583 F.2d 1194 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979) and *State v. Hall*, 297 N.W.2d 80 (Iowa 1980).

44. *United States v. Downing*, 753 F.2d 1224, 1232-1235 (3d Cir. 1985).

45. Fed. R. Evid. 401: Relevant evidence means any evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.

Fed. R. Evid. 402: All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority.

Fed. R. Evid. 403: Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

scientific jury takes center stage and litigation focuses on admissibility. Thus, there is a natural conflict between the central premise of the relevancy rules and that of *Frye*.⁴⁶

Interestingly, the court could have avoided the apparent conflict between relevancy and *Frye* by simply holding that, given the failure of the Fed. R. Evid. drafters to specifically "overrule" the general acceptance standard, Fed. R. Evid. 702 incorporated *Frye*. Again, this would have been inconsistent with the general broadness of Fed. R. Evid. 401-403. However, the drafters arguably contemplated such inconsistency by noting that evidence admissible under the relevancy rules may nevertheless be excluded by the terms of other rules of evidence.⁴⁷ In light of the asserted dangers of "mystic infallibility" posed by novel scientific evidence, a detour from the principle favoring admissibility might have been justified. After all, truth is most often the victim of unfairness. Thus, the broadness of relevancy did not logically demand the death of *Frye*.

Rather than arguing that the possibility that *Frye* had been rejected outright, the *Downing* court took a unique approach by concluding that though the codification of evidence rules "may counsel in favor of a reexamination of the general acceptance standard,"⁴⁸ Fed. R. Evid. 702 neither incorporated nor repudiated *Frye*. This very unusual analysis was based on the theory that since the drafters must have been aware that *Frye* was a judicial creation, the failure to condemn "such interstitial judicial rule-making"⁴⁹ in the rules was to be read as a mere invitation to reconsider the standard.⁵⁰ In other words, the Third Circuit was suggesting that drafters intended the courts to address the issue in a case-by-case fashion.

The flaw in this analysis lies in the nature of the task under which the drafters were laboring. If they had been in the process of drafting non-binding rules, it might have made sense to defer decision on particular issues to the courts of differing jurisdictions. However, the drafters were developing binding rules for an integrated system of courts. Despite this fact, the *Downing* court seemed to be suggesting that the Federal Rules of Evidence drafters were willing to countenance splits among federal courts in their approach to novel scientific evidence. If the development of rules of evidence was to be left to the judiciary, one must wonder why the drafters bothered to take on their task in the first place. Was piecemeal uniformity satisfactory to them? Surely, this would represent an unusual method of codification. In fact, it is arguably the *Downing* court which was inviting reconsideration, not the drafters. Nevertheless, given the court's interpretation of the omissions, the issue of *Frye*'s survival entered the realm of judicial policy-making.

With policy concerns now the focus of attention, the court began its inquiry into the relative merits of maintaining the *Frye* standard. On the positive side is the fact that *Frye* provides a methodology by which novel scientific evidence may be assessed, i.e., "the scientific jury". Theoretically, this method would result in like decisions in like cases and, thus, serve the goal of uniformity of judgement. At the same time, general acceptance also protects criminal defendants from unreliable evidence presented by the prosecution to a jury potentially in awe of science.⁵¹

46. The fairness/truth distinction is best characterized by differences between the common law (e.g., United States, Great Britain and Australia) and the civil law (e.g., continental Europe) systems. The common law system, often deemed accusatorial in nature, places a great deal of emphasis on procedural and evidentiary law. By contrast, in civil law countries the judge, rather than the attorneys, guides the inquiry and does so unhindered by complex rules of evidence or procedure. Thus, the system is often labeled inquisitorial. The distinction might best be illustrated by the comment, "He got a fair trial." Such a comment, commonplace in the United States, would seem out of place in France or Germany. For the French or Germans, a fair trial is simply one in which guilty defendants are convicted and innocent ones are acquitted. This attitude is also reflected in the nature of appeals. In common law countries appeals are generally limited to issues of law. However, civil law jurisdictions generally permit at least one appeal on factual findings.

47. Fed. R. Evid. 402, *supra* note 45.

48. 753 F.2d at 1235.

49. *Id.*

50. *Id.* For a discussion of the background underlying the effort to produce a uniform set of evidentiary guidelines, see Saltzburg and Redden, *supra* note 30, at sec. 1-6.

51. *Downing*, 753 F.2d at 1235. One of Professor Imwinkelried's arguments against the *Frye* standard concerned this paternalistic attitude toward the jury. Imwinkelried, *supra* note 20, at 113. He concludes that the assumption that jurors are unable to assign appropriate weight to scientific evidence, one of the primary rationales for the existence of the *Frye* standard, is simply unwarranted. He cites studies, conducted in civilian forums, which establish just the opposite—that lay jurors are

Counter-balancing these advantages are two significant potential dangers. The first is "vagueness." As the court pointed out, the general acceptance standard is vague because the parameters of the terms "scientific community" and "general acceptance" are ill-defined.⁵² Even if the courts could reach a consensus as to the relevant community regarding a particular form of scientific evidence, the lengthy and divisive process of reaching consensus would be revisited each time a new scientific process was developed. At the same time, the subjectivity inherent in the term "general acceptance" precludes any quantification of the standard.

The second danger cited by the court is "conservatism." As the court perceptively pointed out, the standard is conservative in the sense that it might preclude the admission of probative and reliable evidence.⁵³ Because of the lag time between the development of a new type of scientific evidence and its general acceptance by the scientific community, *Frye* clearly has the potential of excluding evidence that is subsequently determined to be completely reliable. Arguably, this is a neutral flaw, i.e., one that might assist the guilty defendant to keep inculpatory evidence out and assist the government to exclude evidence of an exculpatory nature.⁵⁴ However, neutral or not, if trials are forums where truth is sought that purpose will be hindered.⁵⁵ These two concerns—vagueness and conservatism—led the court to reject *Frye* as "an independent controlling standard of admissibility."⁵⁶ Instead, general acceptance was viewed as but one of potentially many indicators of reliability.⁵⁷

In what has become the accepted approach by courts rejecting *Frye*, including the military courts, the Third Circuit set forth its method of determining whether evidence is admissible under Fed. R. Evid. 702. The key was the term "helpfulness" in the rule. For the court, an assessment of whether novel scientific evidence is helpful depends on three factors:

- 1) the soundness and reliability of the process or technique used in generating the evidence;
- 2) the possibility that admitting the evidence would overwhelm, confuse, or mislead the jury; and
- 3) the proffered connection between the scientific research or test result to be presented, and particular disputed factual issues in the case.⁵⁸

The similarity between this three tiered query and the relevancy rules leaves one with the impression that the court has done more than reject *Frye*. It has arguably defined Fed. R. Evid. 702 as a restatement of the relevancy rules. For example, with regard to the first component of the test, would not evidence resulting from an unreliable or unsound technique or process fail to make a fact in issue more or less probable under Fed. R. Evid. 401? Clearly, it would not. One possible resolution of this quandary is an argument that the question in Fed. R. Evid. 401 is not whether the process or technique is unreliable, but simply whether the result that is generated makes the fact in issue more or less probable. In other words, accurate, albeit unreliable, evidence which makes a fact in issue more or less likely is admissible under Fed. R. Evid. 401—period (unless outweighed by Fed.

able to critically evaluate scientific evidence. Finally, he mentions that this conclusion has special significance for courts-martial as jurors there are generally more sophisticated and better educated than their civilian counterparts. If civilian jurors can handle scientific evidence, surely military jurors can. *Id.* at 117. But see *supra* note 13.

52. 753 F.2d at 1236. See *supra* text accompanying notes 20-22.

53. *Id.*

54. This argument is unsatisfactory for it fails to recognize that the goal of a judicial system is not balance between the government and the defense in the system generally, but rather fairness in a particular trial. The exclusion of reliable, but not generally accepted, exculpatory evidence in a particular trial is hardly a neutral flaw for the now convicted defendant.

55. See *Downing*, 753 F.2d at 1236-1237 for a brief discussion of this point. The court cites *United States v. Sample*, 378 F.Supp. 44 (E.D. Pa. 1974), as an example of a case where a court expresses concern over the exclusion of relevant evidence. *United States v. Addison*, 498 F.2d 741 (D.C. Cir. 1974), is cited as representing the opposite view.

56. 753 F.2d at 1237.

57. "[G]eneral acceptance in the particular field . . . should be rejected as an independent controlling standard of admissibility. Accordingly, we hold that a particular degree of acceptance of a scientific technique within the scientific community is neither a necessary nor a sufficient condition for admissibility; it is, however, one factor that a district court normally should consider in deciding whether to admit evidence based on the technique." *Id.*

58. *Id.*

R. Evid 403 concerns). Absent Fed. R. Evid. 702, reliability of the process or technique would then become only an issue of weight, not admissibility. If this were the approach taken, Fed. R. Evid. 702 would have meaning independent of Fed. R. Evid. 401. However, the *Downing* court itself defeats this argument by noting that the "logical relevance" of Fed. R. Evid. 401-403 does, in fact, involve reliability.⁵⁹

Any number of additional examples could be cited in the characterization of Fed. R. Evid. 702 as a relevancy restatement. For example, would not unreliability under Fed. R. Evid. 702 also necessarily serve to confuse or mislead the jury under Fed. R. Evid. 403? Similarly, the second component of the *Downing* helpfulness test is, arguably, nothing more than Fed. R. Evid. 403 revisited. Indeed, the textual similarities would suggest Fed. R. Evid. 403 served as the model in drafting the decision. Finally, the third component essentially poses the question of whether the evidence in issue is relevant, i.e., it is a Fed. R. Evid. 401 inquiry.

The Third Circuit was clearly sensitive to the possibility that their interpretation of Fed. R. Evid. 702 was illogical in light of the Fed. R. Evid. 401-403 relevancy standards. It, therefore, went to some effort to distinguish the Fed. R. Evid. 702 requirements. The court starts by construing the term "helpfulness" (Fed. R. Evid. 702 standard) as necessarily implying a quantum of reliability "beyond that required to meet a standard of bare logical relevance (Fed. R. Evid. 401). . . ."⁶⁰ Unfortunately, in the absence of quantification or examples, this clarification does little other than muddy the water. Indeed, it smacks of meaningless judicial draftsmanship.⁶¹ In a like manner, the court acknowledges that the Fed. R. Evid. 702 concern about confusing, misleading or overwhelming evidence might mirror Fed. R. Evid. 403 to an extent. However, it posits evidence which could meet the F.R.E 702 requirements, but fail under a balancing test pursuant to Fed. R. Evid. 403. As an example, it suggests that a Fed. R. Evid. 403 prohibition on waste of time or confusion of the issues might operate to exclude evidence admissible under Fed. R. Evid. 702 if additional evidence of guilt existed.⁶² The problem with this analysis is that the real question is whether evidence which passed a Fed. R. Evid. 403 review would ever fail a Fed. R. Evid. 702 confusing, misleading or overwhelming test—not vice versa. If so, that component of the Fed. R. Evid. 702 test would have independent meaning. If not, it is nothing more than a Fed. R. Evid. 403 retest. It is most likely that the latter is the case, at least for practical purposes.

In that it remains unclear whether the *Downing* court did anything beyond simply rejecting *Frye* and requiring that novel scientific evidence meet the basic standards set forth in Fed. R. Evid. 401 through 403, the case is intellectually troubling. Nevertheless, it has come to represent an approach that is increasingly being adopted by jurisdictions throughout the United States. On this 10th anniversary of the Military Rules of Evidence, we turn to one of those jurisdictions - the military justice system.

Evolution of the Military Approach to Novel Scientific Evidence

Despite adoption of the Military Rules of Evidence (Mil. R. Evid.) on 12 March 1980⁶³, the military courts continued to employ the *Frye* test in generally the same manner as their civilian counterparts.⁶⁴ However, as

59. *Id.* at 1235.

60. *Id.*

61. There is a notable absence of effort to make the distinction in subsequent cases. Since the 702 standard is theoretically higher, courts can be expected to generally base their opinions on that rule, using language that will sound identical to a 401 ruling. See, e.g., *United States v. Howard*, 24 M.J. 897 (C.G.C.M.R. 1987).

62. 753 F.2d at 1242-1243.

63. Executive Order 12198 (March 12, 1980).

64. See, e.g., *United States v. Hulen*, 3 M.J. 275 (C.M.A. 1977) and *United States v. Ford*, 4 U.S.C.M.A. 611, 16 C.M.R. 185 (1954). The *Ford* case, which involved urinalysis, was the first military case to endorse the general acceptance standard. But, in 1967, in *United States v. Wright*, 17 U.S.C.M.A. 183, 37 C.M.R. 447 (1967), the Court of Military Appeals became the first appellate tribunal to uphold the admissibility of voiceprint evidence despite the fact that research had not established general acceptance of the technique. According to Judge Ferguson, who dissented, this signified an abandonment of the general acceptance standard and adoption of much more lenient standard against which even polygraph evidence would be admissible. *Id.* at 454 (Ferguson, J., dissenting). This was not to be as ten years later the *Hulen* case firmly reconfirmed the general acceptance standard first announced in *Ford*, 3 M.J. at 275-77.

the Federal Rules of Evidence did in federal courts, the Military Rules of Evidence would eventually provide the impetus for a complete revision in the admissibility standards applicable to novel scientific evidence. That this was to be the case should not be surprising given the clear goal of the military rules drafters to mirror the federal rules to the extent possible.⁶⁵ As a result of that intent, the rules relevant to this inquiry, Mil. R. Evid. 401-403 and 702, are nearly identical to their federal rules counterparts.⁶⁶

The possibility that *Frye* had not survived the promulgation of the rules was not considered in earnest until the Army Court of Military Review's decision in *United States v. Bothwell*.⁶⁷ *Bothwell* involved the attempted admission of a Psychological Stress Evaluation (PSE). The examination, designed to assess veracity, is based on the theory that deception causes psychological effects which in turn result in variations in voice modulation.⁶⁸ The court began, in much the same fashion the *Downing* court would two years later, by taking note of the dispute over the continued viability of the *Frye* standard, specifically in the federal circuits. It accurately attributed this dispute to the failure of the draftsmen to include any mention of the general acceptance standard in the Federal Rules.⁶⁹ That the Federal Rules had been adopted almost verbatim by the military made the debate particularly relevant to military practice. Nevertheless, the court stated that "in the absence of any definitive authority to the contrary, [it was] unwilling to abandon a rule that has been applied in the military for almost thirty years."⁷⁰ Presumably, the appropriate authority would be a Court of Military Appeals decision.

The *Bothwell* court was obviously uncomfortable with the "it's always been done that way" justification it had enunciated. In an effort to bolster its holding, the court turned to the "mystic infallibility" rationale set forth nine years earlier by the D.C. Circuit Court in *United States v. Addison*.⁷¹ In other words, the *Bothwell* court was expressing concern that lay members might very well be overwhelmed by the scientific nature of the evidence and that unfairness would result. At the same time, the court very perceptively realized that critics might allege that the danger of misleading or overwhelming the jury was already taken care of by the Mil. R. Evid. 403 balancing test. Therefore, their interpretation of Mil. R. Evid. 702 as incorporating *Frye* to avoid

65. S. Saltzburg, I. Schinasi & D. Schlueter, *Military Rules of Evidence Manual* 1 (2d Ed. 1986).

66. Mil. R. Evid. 401, 403 and 702 are identical. See *supra* notes 27 and 45 for text. Mil. R. Evid. 402 is identical to Fed. R. Evid. 402 in intent and effect, but includes as limitations sources of law unique to the military. "All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States as applied to members of the armed forces, the code, these rules, this Manual or any Act of Congress applicable to members of the armed forces. Evidence which is not relevant is not admissible." Mil. R. Evid. 402.

67. 17 M.J. 684 (A.C.M.R. 1983). There had been some inkling prior to *Bothwell* of the debate that would emerge in the military courts. In *United States v. Martin* 13 M.J. 66, 68 n.4 (C.M.A. 1982) the Court of Military Appeals noted that Mil. R. Evid. 702 might broaden *Frye*. However, it did not have to address the issue because Mil. R. Evid. 702 was not in effect at the time of trial. Additionally, the evidence was found to be generally accepted and, thus, would have passed muster even under the forthcoming relevancy test. *Id.* at 67-8. Later, Judge Everett, in dicta found in his dissenting opinion in *United States v. Moore*, 15 M.J. 354, 372 (C.M.A. 1983) (Everett, J., dissenting), noted that "the *Frye* test still has vitality." However, this was not an issue because, as with *Martin*, the trial predated the Rules.

68. Though not directly relevant to this discussion, the ultimate decision of the court is interesting. The trial judge refused to permit the defense to lay a foundation for the PSE. In other words, he did not permit testimony on the reliability or general acceptance of the test. On appeal, this was found to be error. However, rather than remanding, the court looked at state and federal cases, as well as several articles, and concluded that it was "unable to imagine anything which [the expert] could have said that might have led the military judge to conclude that PSE enjoys general acceptance in the scientific community." Thus, the error was harmless. 17 M.J. at 688. There are two problems with this result. If it was so clear that the proffered evidence was unreliable that the appellate court could reject it out of hand, then why was the trial court wrong to do likewise? Certainly, not all evidence merits an admissibility hearing. Evidence based on astrology or voodoo could probably be rejected without a hearing. Additionally, the court claimed PSE was in the "experimental rather than the demonstrable stage." *Id.* at 688. To support this claim, it cites cases, House Committee hearings and articles as aged as nine years old. *Id.* Though it may very well be the case that PSE was still in the experimental stage in 1983, to cite scientific support nine years old is questionable.

69. *Id.* at 686-687.

70. *Id.* at 686-687.

71. *Id.* at 687, citing *Addison*, 498 F.2d 741, 744 (D.C. Cir. 1971).

such dangers would clearly be subject to attack. To preempt such criticism, the court declared the *Frye* protection to be greater than that of Mil. R. Evid. 403, basing its argument on the words "substantially outweighed" in the rule.⁷² It appears clear in retrospect that the hidden agenda of the *Bothwell* court was to invite others to join the affray.⁷³ However, until that occurred the *Bothwell* court was unwilling to explore new ground. Thus, *Frye* would remain the accepted standard.

That was soon to change as military courts began to question the survival of *Frye* and rule in favor of an expansive view of Mil. R. Evid. 702. In *United States v. Snipes*, the Court of Military Appeals held that the intent of Mil. R. Evid. 702 was to "broaden the admissibility of expert testimony."⁷⁴ Upholding the admission of rebuttal evidence by a child psychiatrist concerning sexual abuse, the court stated that there was "a sufficient body of 'specialized knowledge' as to the typical behavior of sexually abused children and their families to permit certain conclusions to be drawn by an expert."⁷⁵ Though such verbiage resembles general acceptance, that standard was not discussed by the court. This fact, combined with the earlier comment on admissibility, indicated the court was slowing moving in the direction of the relevancy approach.

Not long after *Snipes* the Court of Military Appeals would move even closer to adoption of the relevancy approach in *United States v. Mustafa*.⁷⁶ *Mustafa* was a rape-murder case in which the government called an Army Criminal Investigation Division (CID) agent to testify concerning blood flight analysis. The defense objected on the grounds that blood flight analysis was not generally accepted.⁷⁷ Without addressing the issue head on, the court found that there was "a body of specialized knowledge which would permit a properly trained person to draw conclusions as to the source of the blood."⁷⁸ It then went on to find, discussing the effect on *Frye* and the general acceptance standard only peripherally, that this meant the evidence was "helpful, i.e., relevant."⁷⁹ Thus, it was admissible.⁸⁰ Though certiorari was denied on appeal to the Supreme Court, Justices

72. 17 M.J. at 687. Does this suggest that the court defines Mil. R. Evid. 702 as meaning that anytime the judge finds the probative value outweighed by the prejudicial effect, albeit very slightly so, the evidence should be deemed inadmissible? Such an interpretation would vest enormous discretion in trial judges handling this inherently subjective issue.

73. In other cases, the question was avoided when possible. For example, in *United States v. Lusk*, 21 M.J. 695 (A.C.M.R. 1985) the issue was the admissibility of a Becton-Dickinson Duquenois test for the presence of marijuana. Although the court noted that the new Military Rules of Evidence cast doubt on *Frye*, this particular test was generally accepted. *Id.* at 699. As a result, the court did not have to address the problem of a test which was not generally accepted, but might, nevertheless, meet a lower standard (if one existed).

74. 18 M.J. 172, 178 (C.M.A. 1984). The court went on to note that "the essential limiting parameter is whether the testimony 'will assist the trier of fact to understand the evidence or to determine a fact in issue.'" *Id.*

75. *Id.* at 179.

76. 22 M.J. 165 (C.M.A.), cert. denied, 479 U.S. 953, 107 S. Ct. 444, 93 L. Ed. 2d 392 (1986).

77. *Id.* at 167. A second objection was that the CID agent was not a qualified expert. This issue is related to the general acceptance issue because it likewise turns on a determination of how broad Mil. R. Evid. 702 was meant to be. The CID agent had attended a five day course by one of the preeminent practitioners in the field and received other unspecified training, but was not a chemist, nor had he written on the subject. Additionally this was only his second case involving the technique. The court found that he was an expert. *Id.* at 168. In a beautiful piece of judicial draftsmanship, it noted that "(g)iven the broad language of Mil. R. Evid. 702, we have no doubt that Sherlock Holmes could be eminently qualified as an expert in this field." *Id.* at 168 n.6. This decision is indicative of the court's new approach to admissibility and previewed how the broader approach would affect the *Frye* standard.

78. *Id.* at 168. The court did not address the term "general acceptance." Instead, its finding that there was a body of "specialized knowledge" was based on three factors: 1) state courts had accepted similar evidence, 2) the technique was based on established laws of physics and common sense, and 3) the process was capable of quantification. *Id.* Clearly, the court was looking to the issue of reliability, but not depending on a "scientific vote" in doing so.

79. *Id.*

80. By labeling the expert testimony "helpful, i.e., relevant," it is unclear whether the court is using Mil. R. Evid. 702 or Mil. R. Evid. 401 and 402 as the standard. 702 deals with helpfulness, whereas 401 and 402 involve relevancy. The wording of the decision would suggest the terms are synonymous. Further, the decision mentions all three rules without ever clearly distinguishing among them. This type of imprecision reappears in subsequent decisions such as *Gipson*, 24 M.J. 246 (C.M.A. 1987). The result is that it becomes extremely difficult for trial practitioners to deal with novel scientific evidence in a systematic way.

White and Brennan would have granted it to resolve the issue of whether the rules incorporated the *Frye* standard.⁸¹

Though *Mustafa* was clearly a rejection of the stringent standards of the general acceptance test, it failed to replace that test with any definitive analytical framework for use in evaluating the admissibility of novel scientific evidence. Nevertheless, the Court of Military Appeals was clearly moving in the direction of relevancy. Emphasis on terms like "helpful and relevant," in light of the debate then occurring in the federal circuits, could mean nothing else. The chronology of the cases cited makes clear where the court was going: *Bothwell*⁸², December 1983; *Snipes*⁸³, July 1984; *Mustafa*⁸⁴, June 1986; *Mustafa*, certiorari denied, November 1986⁸⁵. That the military courts would adopt relevancy in 1987 seemed inevitable, particularly after Justice White's dissenting opinion arguing that resolution of the conflict was required. That it would probably specifically adopt the *Downing* approach should also have been apparent from the fact that Justice White selected a single case to cite as representative of the "flexible standard of admissibility"—*Downing*.⁸⁶ Just over eight months later, the court would do exactly that in *United States v. Gipson*.⁸⁷

In *Gipson* the appellant had made a motion *in limine* to admit evidence of an exculpatory polygraph.⁸⁸ Refusing to allow a defense attempt to lay a foundation for admissibility, the trial judge ruled that polygraphy was not "accepted that well in the scientific community or the judicial community. . . ."⁸⁹ At the appellate level, therefore, the granted issue was the appropriateness of that refusal. In order to assess whether the opportunity to lay a foundation should have been permitted the defense, it was necessary to ascertain what the requisite foundation was. It was this question which opened the door to relevancy in the military courts.

81. 93 L. Ed. 2d at 393 (White, J., and Brennan, J., dissenting). Such a ruling, whether finding incorporation or not, would obviously have had enormous impact in the federal, as well as the military courts.

82. 17 M.J. 684.

83. 18 M.J. 172.

84. 22 M.J. 165.

85. 93 L. Ed. 2d at 392.

86. *Id.* at 393.

87. 24 M.J. 246 (C.M.A. 1987). Interestingly, *Gipson* is generally characterized as a case important because of the issue of polygraph admissibility. In fact, that is not the reason *Gipson* is a seminal case for the military practitioner. Instead, its importance lies in the fact that it overruled prior military case law which employed the *Frye* standard in assessing novel scientific evidence. The case could have involved any novel scientific technique or process and would have had precisely the same effect on the admissibility of polygraphs.

88. A motion *in limine* would be an appropriate way to raise the issue of the admissibility of novel scientific evidence. In making the tactical choice of when and whether to make the motion, litigators should remember that the burden of persuasion is generally on the party making the motion or raising the objection. See R.C.M. 801(e)(4),(5) and 801(g). Additionally, if the motion has resulted in the preclusion of novel scientific evidence, the proponent should insure the trial judge's essential findings (R.C.M. 905(d)) are as complete as possible. At minimum, they should address all components of both the relevancy rules and Mil. R. Evid. 702. To the extent the findings on the record are incomplete, the judge should be asked to fill in the gaps. Similarly, if the proponent senses the trial judge misunderstands the legal standard, he should ensure the misunderstanding is placed on the record. Doing so will not only preserve the issue for appeal, but also will give appellate litigators the material they need to work with. This is particularly important with regard to novel scientific evidence because as advances in forensic science are made, the ability of appellate level courts to declare "harmless error" will diminish. For a brief, but extremely helpful, guide to motion practice in the military, see American Bar Association, *Military Motions: A Handbook for Lawyers* (1986).

89. 24 M.J. at 247. An interesting question is why the defense was not permitted to attempt to lay a foundation even if the general acceptance standard was being used by the judge. Essentially, the judge was holding that the evidence was not generally accepted without taking evidence on that issue. This is similar to what happened in *Bothwell*, 17 M.J. at 684. If this practice was followed regularly, one must query how a technique or process that at one time might have been unreliable, but which was subsequently improved, would ever get into court. The trial judge in *Gipson* did note that the government was offering a potentially inculpatory polygraph. 24 M.J. at 247. Presumably, the fact that there were two different results was to be taken as an indication of the general unreliability of polygraphs. However, without taking evidence, how could the judge possibly have known whether the difference was the result of factors that would relate to admissibility or only of factors concerned with the appropriate weight to be afforded the seemingly divergent results?

The court relied heavily, in deciding the case, on the reasoning of the Third Circuit in *Downing*.⁹⁰ Indeed, the published opinion is very much the *Downing* decision reissued in the military context. As a prelude to its adoption of relevancy, the court first discussed the pros and cons of the *Frye* standard⁹¹, as well as the dispute then occurring in the federal system over continued adherence to the standard in light of the Federal Rules.⁹² The chief concern expressed by the court was "that too much good evidence went by the boards during the 'lag time' inherent in the scientific 'nose-counting' process."⁹³

The groundwork laid, the court went on to analyze the Military Rules of Evidence. Given the near verbatim adoption of the Federal Rules by the military, it is not surprising that the court's analysis tracked that set forth in *Downing* very precisely. Most importantly, it completely adopted the *Downing* understanding of Fed. R. Evid. 702 in its own analysis of Mil. R. Evid. 702.⁹⁴ Hence, Mil. R. Evid. 702 would be deemed to require an inquiry into the three *Downing* criteria: 1) soundness and reliability of the process or technique; 2) the possibility of overwhelming, confusing, or misleading the jury; and 3) the proffered connection with the disputed factual issue.⁹⁵

In its adoption of the *Downing* approach to relevancy, the court considered two additional factors unique to military consideration of 702. First, the drafters of the military rules had specifically noted in their analysis that Mil. R. Evid. 702 might "be broader and [might] supersede *Frye*. . . ."⁹⁶ Thus, their rejection of *Frye* was technically on firmer ground than that of the Third Circuit. In addition, the 1969 Manual for Courts-Martial had specifically stated that polygraph results were inadmissible.⁹⁷ In the rules, however, this evidentiary exclusion had been omitted.⁹⁸ Both of these were, arguably, factors indicating the drafters intended to expand the standards for admissibility beyond the narrow confines of *Frye*. Indeed, how could the specific mention of *Frye* be read as anything other than an invitation for the courts to reject this judicially created norm?⁹⁹ Similarly, to the extent that polygraphs were no longer singled out for exclusion, in the absence of new information on their reliability, the standard must have changed.¹⁰⁰ Therefore, the court, relying on the *Downing* rationale combined with a focus on the text of the new rules and their analysis, found *Frye* to have been superseded by the relevancy approach.¹⁰¹

90. 753 F.2d 1224 (3d Cir. 1985).

91. 24 M.J. at 250.

92. *Id.*

93. *Id.*

94. *Id.* at 250-251.

95. *Id.* at 251. See *supra* text accompanying note 58.

96. *Id.*

97. Paragraph 142c, Manual for Courts-Martial, United States, 1969 (Revised ed.).

98. *Gipson*, 24 M.J. at 250.

99. It could be read as an indication that the drafters, who were writing the new rules as the Fed. R. Evid. 702 debate was occurring, were unsure of what standard to adopt and, therefore, were leaving it up to the courts. Arguably, the use of the word "may" was an indication that the military drafters felt it appropriate to retain *Frye*, but given the current debate were unwilling to do so until the issue was resolved as to Fed. R. Evid. 702.

100. See *Gipson*, 24 M.J. at 250-251 for a discussion of both points. With regard to the failure to mention polygraphs, the drafters may simply have felt that it was poor draftsmanship to single out any one form of novel scientific evidence. Additionally, the omission may have been an indication of their belief that it would be inappropriate to exclude a category of evidence that might, over time and with advances in science, become *generally accepted*. This is of course speculation, but probably no more so than the court's own analysis of the deletion. The Drafter's Analysis sheds no light on this specific issue.

101. Though concurring, Judge Everett seemed to have had mixed emotions. He noted that "at the very least, the expert witness should be able to relate his theories to scientific principles having a *substantial body of adherents*." *Id.* at 255 (Everett, J., concurring) (emphasis added).

The Relevancy Approach under *Gipson*

Based upon the holding in *Gipson*, military courts currently consider four evidentiary rules prior to admission of novel scientific evidence —Mil. R. Evid. 401-403 and 702.¹⁰² Basically, there are three broad requirements:

- 1) The evidence is relevant and admissible under 401 and 402;
- 2) The evidence is helpful to the fact-finders under 702; and
- 3) The probative value outweighs any dangers posed by the evidence under 403.¹⁰³

Though the Court of Military Appeals did not specifically label their new approach to novel scientific evidence, the requirements listed above are nearly identical to those set forth by commentators and courts advocating what has become known as the "relevancy" test.¹⁰⁴ In its pure form, the relevancy approach treats novel scientific evidence like any other type of evidence by asking whether the evidence is probative and, if so, whether its probative value outweighs the dangers posed by admission.¹⁰⁵ Arguably, both *Downing* and *Gipson* require further evaluation of the evidence using the expert testimony rule, Fed. R. Evid. or Mil. R. Evid. 702. As was discussed earlier¹⁰⁶, though, there is some question as to whether those rules are simply restatements of the relevancy rules or whether they are qualitatively different. However, regardless of the academic exercise of differentiating between the relevancy and expert testimony rules, both the *Downing* and *Gipson* courts treated them as different. Therefore, any proposal of practical use will do likewise.¹⁰⁷

With the adoption of the relevancy approach by the military courts, practitioners are now faced with a significantly different mode of analysis when determining the potential admissibility of scientific evidence than

102. *Id.* at 251-252.

103. See generally *Gipson*, 24 M.J. 246. See also *United States v. Abeyta*, 25 M.J. 97 (C.M.A. 1987) and *United States v. Dozier*, 28 M.J. 550, 551 (A.C.M.R. 1989). *Abeyta* excluded polygraph evidence on the grounds that the accused did not testify, and therefore, it was not relevant. 25 M.J. at 98. *Dozier* held the trial court's exclusion of a speech pathologist's testimony to be error. 28 M.J. at 552. The pathologist would have testified that the accused did not make certain phone calls based on a phonetic transcription of the his voice. This is an important case because the court noted that the technique offered would have met the *Frye* test. *Id.* This illustrates that the test may still be used to meet the requirements of *Gipson*. As the *Gipson* court noted, in evaluating probativeness and helpfulness, "one of the most useful tools is that very degree of acceptance in the scientific community we just rejected as the be-all-end-all standard." 24 M.J. at 252.

104. For an excellent discussion of the "relevancy test" see P. Giannelli & E. Imwinkelried, *Scientific Evidence* (1986). They note that the relevancy test has three steps: 1) identify the probative value of the evidence, 2) identify any countervailing dangers or considerations inherent in admission, and 3) balance the probative value against the dangers posed. In terms of probative value, when dealing with scientific evidence the focus should be on the reliability factor. *Id.* at secs. 1-6(A)-(C). Cases discussing the probative value issue include *United States v. DeBetham*, 348 F. Supp. 1377 (S.D. Cal 1972), *aff'd*, 470 F.2d. 1397 (9th Cir. 1972), *cert. denied*, 412 U.S. 707 (1973) and *United States v. Ridling*, 350 F.Supp. 90 (E.D. Mich. 1972) On the other hand, one of the major countervailing dangers is that of "mystic infallibility." See *supra* note 11 and accompanying text.

105. See *supra* notes 35-36 and accompanying text.

106. See *supra* notes 59-61 and accompanying text.

107. It must be remembered that the standard for appellate review of admissibility in the area of novel scientific evidence is "abuse of discretion." See Giannelli and Imwinkelried, *supra* note 104, at sec. 16(c); *United States v. Williams*, 583 F.2d. at 1194, 1200 (2d Cir. 1978); *United States v. Baller*, 519 F.2d. 468, 467 (4th Cir. 1975). For error to be found, the ruling must have materially prejudiced a substantial right of a party. Mil. R. Evid. 103(a). In order for the error to be preserved, an objection must be made in a timely fashion, "stating the specific ground of objection, if the specific ground was not apparent from the context." Mil. R. Evid. 103 (a)(1). Additionally, in cases excluding evidence, an offer of proof as to the excluded evidence must have been made unless contextually clear. Mil. R. Evid. 103 (a)(2). Defense counsel should not rely on the plain error doctrine. Mil. R. Evid. 103 (d). Particularly in the area of novel scientific evidence, plain error will be difficult to demonstrate if for no other reason than the novelty of the process. A full-blown hearing on a motion *in limine* should meet most of these requirements and is the recommended method for litigating the admissibility of scientific evidence. Obviously, in most cases the defense will want to address this issue prior to the entering of pleas, particularly if the evidence is inculpatory.

they were during the years of the general acceptance standard. This article will propose an analytical framework to use with regard to such evidence. However, it is first necessary to clearly understand the rules used in the analysis: M.R.E 401, 402, 403, and 702.

Mil. R. Evid. 401 and 402

Fed. R. Evid. 402 provides that all relevant evidence is admissible unless otherwise provided by the Constitution, the Manual for Courts-Martial or Acts of Congress.¹⁰⁸ Therefore, it is necessary to turn to the definition of relevant evidence under Mil. R. Evid. 401 to ascertain admissibility. Basically, relevant evidence is that which has any tendency to make a fact in issue more or less probable.¹⁰⁹ Evidence which does so is deemed logically relevant. Determining whether or not the evidence is logically relevant is essentially a tiered inquiry consisting of materiality and probativeness. To be material, the evidence must bear on an issue in the case. If it does not, it is immaterial and, thus, cannot be relevant. Assuming the evidence in question is material, an inquiry into whether it actually makes the issue more or less probable must be conducted. If so, it is probative and the evidence is now relevant.¹¹⁰ Ascertaining materiality with regard to novel scientific evidence presents no apparent problems beyond those of other forms of evidence. However, decisions involving the admission of scientific evidence do tend to pay more attention to the second part of the inquiry, the issue of probativeness.

This issue of probativeness is generally framed in terms of reliability.¹¹¹ Logic dictates that if evidence is unreliable, or more precisely if it lacks reliability, then it does not make any fact in issue more or less probable. This approach has become part and parcel of the military courts' Mil. R. Evid. 401 analysis, and, as a result, a prerequisite to the admission of novel scientific evidence.¹¹² The problem with the military's use of a "reliability" standard as part of a Mil. R. Evid. 401 analysis is that the term is ill-defined in military case law. *Gipson*, which expressly makes reliability under Mil. R. Evid. 401 applicable, said little to quantify reliability beyond stating that Mil. R. Evid. 702 would require a "greater quantum" of reliability than that required by the dictate of logical relevancy.¹¹³ How much greater is not clear. At the same time, *Gipson* failed to set forth what it is that is supposed to be reliable.¹¹⁴ As a result, weight/admissibility distinctions remain blurred.

In fairness, the *Gipson* court did provide some assistance to those who would apply their new standard, although ironically in the form of *Frye*. Despite the fact that *Frye* was rejected as the "be-all-end-all standard," the Court of Military Appeals held that general acceptance remained a factor for consideration by courts, both as to the issue of probativeness (401) and that of helpfulness (702).¹¹⁵ Therefore, if evidence passes muster under the old *Frye* standard, it should generally survive a *Gipson* review.¹¹⁶

Ironically, additional assistance in defining the relevancy approach as adopted by the military was provided by the Army Court of Military Review in *Bothwell*.¹¹⁷ Though that court retained *Frye*, it usefully set forth the areas of reliability it felt Mil. R. Evid. 401 affected. In determining reliability of scientific evidence, an inquiry into three factors is suggested: 1) the validity of the principle underlying the technique used; 2) the validity of the technique itself; and 3) the proper application of the technique on the particular occasion which resulted in

108. Mil. R. Evid. 402, *supra* notes 45 and 66.

109. Mil. R. Evid. 401, *supra* notes 45 and 66.

110. See generally McCormick on Evidence (E. Cleary 3d ed. 1984), sec. 203, at 605-609.

111. See, e.g., United States v. Gipson, 24 M.J. 246, 251-252 (C.M.A. 1987).

112. *Id.* at 251.

113. *Id.*

114. See *id.*

115. *Id.* at 252.

116. The one problem may be the Mil. R. Evid. 702 focus on overwhelming, misleading or confusing. As discussed *supra* in text accompanying note 62, if Fed. R. Evid. and Mil. R. Evid. 702 are to have meaning beyond their 403 counterparts, they must be more restrictive. If this is so, then evidence which survived a *Frye* and 403 analysis might not survive a *Gipson/Downing* 702 analysis.

117. 17 M.J. 684 (A.C.M.R. 1983).

generation of the evidence.¹¹⁸ As in *Gipson*, the lack of quantification is one problem posed by the suggested methodology. Additionally, it must be remembered that *Bothwell* is technically nothing more than persuasive authority. Nevertheless, the case does at least provide some semblance of methodological order for courts struggling though the imprecision of *Gipson*.

The case can also serve as a framework for developing argument on the issue of admissibility versus weight. In that *Bothwell* calls for a review of the entire scientific process, from principle to application, it can be reasonably asserted that the admissibility/weight distinction is one of degree, not of subject matter, when considering novel scientific evidence. For example, the question is not whether concerns about a principle will fall within the purview of the judge as the finder of the law or the jury as the finder of the fact. Instead, the issue is whether the concerns have reached a level where the judge, as a matter of law, will refuse to allow the jury even to consider the evidence.

As should by now be apparent, the process of defining reliability in a usable way is difficult. In the effort to determine the parameters of inquiry, even reliance on the well-reasoned *Bothwell* decision leaves one foundering, for subjectivity pervades the entire process. Though law is certainly no stranger to subjectivity, that which exists in making reliability determinations poses particular difficulty. However, the standard does exist and the three *Bothwell* inquiries will assist litigators and the judiciary to address the issue with a semblance of coherence.

Mil. R. Evid. 702

Assuming scientific evidence meets the requirements of Mil. R. Evid. 401 and 402, it then must be analyzed against Mil. R. Evid. 702. Reliability, as with Mil. R. Evid. 401, is the key to Mil. R. Evid. 702.¹¹⁹ However, with regard to 702 reliability, the *Gipson* court provided a much greater indication of what it meant by the term than it had when discussing Mil. R. Evid. 401. Basically, the test is "helpfulness" to the fact-finder¹²⁰, an indication that the court logically concluded that unreliable evidence is unhelpful.¹²¹ It is this assumption which led to their articulation of three factors which must be balanced when determining helpfulness.

As noted earlier, in *Gipson* the Court of Military Appeals adopted the *Downing* court's analysis of helpfulness.¹²² Military courts will now be required to evaluate the soundness and reliability of the process or technique, the possibility of misleading, overwhelming or confusing the jury and the extent of the connection between the evidence and the disputed factual issue.¹²³ Obviously, these aspects again present the problem of quantification. In other words, the imprecision in distinguishing between admissibility and weight issues remains. Unfortunately, the court did little to resolve the issue beyond noting that a greater degree of reliability will be required than in a Mil. R. Evid. 401 inquiry.¹²⁴ The weight versus admissibility issue is, thus, both a Mil. R. Evid. 702 and 401 issue. Presumably, it will be up to the trial judge to decide when the controversy

118. *Bothwell*, 17 M.J. at 686.

119. *Gipson*, 24 M.J. at 251.

120. *Id.*

121. This is not a necessary conclusion, however. Arguably, unreliable evidence may, in fact, be valid evidence. As an extreme example, consider the ancient proposition that the earth was flat. An assertion that the earth was round would, prior to the 15th century, have been rejected out of hand not only as unreliable, but, indeed, as contrary to the scientific principles then generally accepted. Albeit extreme, this example highlights the problem implicit in a new technique, particularly when that technique is based on truly novel scientific principles. To resolve this theoretical problem would require courts to forego admissibility analysis in favor of an almost exclusively weight evaluation by the fact finder. Obviously, for policy reasons, this will not be done.

122. See *supra* text accompanying notes 94-95.

123. *Gipson*, 24 M.J. at 251.

124. See *id.*

over reliability is severe enough to merit taking the issue from the jury entirely by ruling the evidence inadmissible.¹²⁵

In setting forth the first tier of a Mil. R. Evid. 702 inquiry, the *Gipson* court neglected to discuss what it meant by soundness and reliability of the technique or process. Though such an omission would normally be fatal in the attempt to develop an analytical methodology, the near total reliance of the court on the *Downing* decision can be used to flesh out the definition. Perceiving the problems courts might encounter in assessing reliability, the Third Circuit set forth a number of factors which might be considered. First and foremost is the degree of acceptance of the technique or process.¹²⁶ In essence, this is a quasi-*Frye* analysis. Certainly, if a technique or process has gained general acceptance in the scientific community, it is in all likelihood reliable. On the other hand, the *Downing* court notes that "a known technique which has been able to attract only minimal support within the community is likely to be found unreliable."¹²⁷ It is the grey area between "general acceptance" and "minimal support" that requires further elucidation.

To flesh out the grey area, *Downing* suggests a number of tactics. Beyond acceptance, a court may consider the uniqueness or novelty of a technique or process. In other words, given a novel scientific technique, to what extent is it based on established and well-accepted principles? Similarly, the technique or process may have been critiqued in literature from the relevant field of study. In both these cases, the key is the extent to which the "scientific basis of the new technique has been subjected to critical scientific scrutiny."¹²⁸ Other factors which might be addressed include the "qualifications and professional stature of the witnesses," the "non-judicial uses to which the scientific technique are put," "the frequency with which a technique leads to an erroneous results"¹²⁹ and the "type of error"¹³⁰ generated. Of course, a court could always choose to take judicial notice of testimony supporting or attacking the technique in prior cases.¹³¹

The *Gipson* decision also provided little guidance on how to ascertain whether the evidence would overwhelm, confuse or mislead the members, particularly in light of the Mil. R. Evid. 403 limitations. However, again by focusing on the *Downing* decision, one can at least sense the type of issues the courts would address. Obviously, one danger is the *Addison* "mystic infallibility"¹³² concern.¹³³ In noting this problem, the *Downing* court clearly felt the need to address the concerns of those who opposed rejection of *Frye*, for clearly *Frye* was meant in great part to avoid the "mystic infallibility" of scientific evidence in the eyes of the layman. However, just because the *Downing* court altered the standard of admissibility, there was no reason to assume this problem would vanish.¹³⁴ Therefore, the relevancy test does tackle the problem through a tier of the newly articulated 702 inquiry. To the extent a piece of scientific evidence will generate undue credibility and be afforded undue

125. Of course, this is also what the trial judge did under the *Frye* standard. However, he now has much greater leeway because under *Frye* he was constrained by expert testimony on whether the procedure was generally accepted. Therefore, as can be seen, the relevancy approach enhances the role of the judge. Not only does he supplant *Frye*'s "scientific jury," but he does so in the absence of clear guidelines on where to draw the admissibility versus weight line.

126. *Downing*, 753 F.2d at 1238. The *Gipson* court similarly retains *Frye* in this manner. 24 M.J. at 252.

127. 753 F.2d at 1238.

128. *Id.*

129. As a measure of reliability, the court suggests comparing the number of times a valid result occurs to the number of times the result is erroneous. Anytime the technique is more likely to produce the erroneous result, it should be deemed unreliable. *Id.* at 1239.

130. *Id.*

131. *Id.* at 1238-1239. The court based its discussion on the work of Judge Weinstein and Professor Berger. 3 J. Weinstein and M. Berger, Weinstein's Evidence, sec. 702 (1985). With regard to judicially noting testimony of experts in previous cases, care must be taken to ensure the state of the scientific technique has not changed. Advances in technology are inherent in novel scientific techniques because, at least until they become generally accepted, they are continually being tested and evaluated. Therefore, the procedure may have been improved or, alternatively, discredited since the testimony in a prior case was taken.

132. 498 F.2d at 744. See *supra* note 11 and accompanying text.

133. *Downing*, 753 F.2d. at 1239.

134. Indeed, the absence of experts testifying that the technique is not generally accepted may exacerbate the perceived problem of "mystic infallibility."

weight by the fact finder simply because of its scientific nature, it is more likely to be deemed inadmissible when the probative versus prejudicial balancing occurs.

The irony is that this approach simply restructures the *Frye* response to the problem. Under *Frye*, those best able to assess the evidence would pass judgement on its admissibility. However, if less than generally accepted evidence meets the first tier of the 702 analysis under *Downing/Gipson* (soundness and reliability), the propensity to mislead or confuse is compounded by the "mystic infallibility" phenomena because the evidence is less reliable than it would have been under *Frye*. Logically, less reliable evidence poses greater dangers of misleading, confusing or overwhelming. The unanswered question is, of course, how the balance plays itself out. Would more evidence be inadmissible based on lack of general acceptance under *Frye* than would be if based on confusion, etc. under the relevancy test given the lesser degree of acceptance that test requires? That is to be seen.

Two additional potential scenarios are singled out in *Downing* as posing particular dangers. The greater danger involves the offer of conclusions by the expert witness without a critical assessment of the underlying data.¹³⁵ In such cases, the expert serves as his own "scientific jury" and propounds his own evaluation of the accuracy of the evidence. This is problematic because under the relevancy standard the task of demonstrating reliability is less onerous. The proponent no longer needs to present the "ruling" of the "scientific jury" prior to admission.¹³⁶ Instead, he need only convince the judge, a layman in the field of science.

The second problem cited in *Downing* is that of subjectivity. As the court notes, scientific evidence is often generated in raw form by mechanical devices. It then becomes the duty of the expert to subjectively evaluate the evidence.¹³⁷ The classic example is, of course, found in polygraphy. Again, subjectivity is a greater danger under the relevancy test because the process by which the expert subjectively evaluates the data undergoes less scrutiny. Therefore, in the absence of strict scrutiny of the process, there is significant potential for subjectivity flaws in a relevancy approach to 702.

Once the court has considered the degree of reliability and the potential to confuse, mislead or overwhelm, it must balance the two.¹³⁸ In *Downing*, the Third Circuit purposefully declined to enunciate the foundation for doing so. It reasoned that since a balancing test which had policy implications was being employed, it would be inappropriate to impose a standard as if the process involved only factfinding. Instead, it would simply use an abuse of discretion standard to review the decisions of lower courts.¹³⁹ In other words, it will very much be up to the trial judge to ascertain when the balance, given the particular type of evidence involved, and in light

135. 753 F.2d at 1239.

136. This is a particular problem with regard to novel forensic scientific techniques. To the extent that a technique is unique to forensic science, the experts who have developed it, and who will testify concerning its reliability, may very well have a vested interest in its acceptance by the courts. Further, since it is a forensic technique, it may be some time before an unbiased scientific community, not involved with forensics, evaluates it.

137. 753 F.2d at 1239. The problem of bias discussed *supra* at note 136 is present here as well. To the extent a private laboratory is involved in forensics, it has a vested interest in being able to generate definitive results. The problem is not so much one of producing results which a client would want, as it is of reporting a result at all when the data may not be clear enough to support one. Concerns in this area are not limited to private firms. For example, although this writer found Air Force Office of Special Investigations (AFOSI) polygraphers to be extremely fairminded and objective, there is a common perception among military defense counsel that AFOSI polygraphs are unreliable and have an undue tendency to inculcate. As part of a team designed to "catch" criminals, the belief is that OSI polygraphers will want to do so, either consciously or unconsciously, via the polygraph examination.

138. An example of the balancing is found in *United States v. Mance*, 26 M.J. 244 (C.M.A. 1988). The court refused to permit expert scientific testimony to the effect that melanin, a substance responsible for skin pigmentation and found in urine, could result in a positive urinalysis for cannabis. It court noted that the expert involved was self-taught, he had no formal forensic education, he had no lab, no tests had been done which verified the theory and he was unaware of any scientist other than himself who supported the theory. Therefore, the testimony would only serve to confuse and mislead the fact-finders. *Id.* at 247.

139. 753 F.2d at 1240. There have been a number of military appellate cases upholding the judge's discretionary powers. In *United States v. Jensen*, 25 M.J. 284, 289 (C.M.A. 1987), the Court of Military Appeals, citing *Gipson*, upheld the trial judge's exclusion of an exculpatory polygraph. The great degree of discretion granted was indicated by the fact that

of other evidence adduced at trial, will tip in favor of admissibility or exclusion. Presumably military courts will take the same approach.

If the reliability of the evidence outweighs the potential dangers, the court must consider the final factor implicit in M.R.E. 702, the proffered connection between the offered evidence and the fact in issue.¹⁴⁰ This issue is reminiscent of the Mil. R. Evid. 401 requirement that the evidence render a fact of "consequence . . . more or less probable."¹⁴¹ Generally, articulating the connection will not be an overly demanding task for the practitioner.¹⁴² Further, because reliability is already described as a 702 requirement, the issue will, in fact, be one of materiality.¹⁴³ Therefore, assuming the reliability of evidence outweighs its dangers, the proponent need only show that it will help the fact-finder resolve a disputed issue.¹⁴⁴

Mil. R. Evid. 403

The last requirement under a *Gipson* relevancy analysis is that the probative value not be "substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the members, or by undue delay, waste of time, or needless presentation of cumulative evidence."¹⁴⁵ In assessing the balance, the

there was no discussion of the basis for exclusion and by the court's statement that "this is not to say that (the trial judge) would have erred by admitting (the) evidence." *Id.* An example of a case finding the trial judge to have abused his discretion is *United States v. Rivera*, 26 M.J. 638 (A.C.M.R. 1988). In *Rivera*, the prosecution called an expert in psychology to testify about the "therapist-patient sex syndrome." Citing *Gipson* and *Snipes*, the *Rivera* court acknowledged that the rules relating to novel scientific evidence had been relaxed. However, the court went on to point out that the expert in question and his associates were about the only people doing research in this area and that the syndrome was not recognized in the *Diagnostic and Scientific Manual* (DSM III). *Id.* at 641. The court then ruled that the trial judge had abused his discretion by admitting the testimony because both the technique employed and its underlying principle were very much open to question. Additionally, there was concern about the aura of "scientific legitimacy." *Id.* at 642. *Rivera* is a fascinating case because it very much reads like a *Frye* case, particularly when the discussion turns to issues like inclusion in DSM III and the number of researchers looking at the issue. Inclusion in DSM III is, in particular, a general acceptance issue. Of course, *Frye* retains value in light of *Gipson*, but only when it serves as a standard resulting in the admission of evidence. However, the absence of general acceptance under *Gipson* should only serve to continue the inquiry.

140. *United States v. Gipson*, 24 M.J. 246, 251 (C.M.A. 1987).

141. Mil. R. Evid. 401, *supra* notes 45 and 66.

142. The proponent of the evidence should make an on-the-record proffer of the relationship asserted. For a discussion of this point, see *United States v. Downing*, 753 F.2d 1224, 1242 (3d Cir. 1985).

143. An example of a case rejecting evidence on this basis is *United States v. Dibb*, 26 M.J. 830 (A.C.M.R. 1988). In this case the defendant alleged that he was suffering from a transient mental disturbance caused by urea formaldehyde gas and, therefore, did not have the mens rea to establish the dishonorable nature of his acts, i.e., issuing worthless checks. *Id.* at 831. The court rejected the evidence because the defendant made "no proffer that (he) presently suffered from such a mental disturbance, that the physiological condition caused a psychological reaction, or that the military environment in which the appellant lived and worked contained substances that would trigger the onset of the mental disturbance." *Id.* at 832.

144. One final consideration in a Mil. R. Evid. 702 analysis is whether the individual providing the testimony can be qualified as an expert. To be so qualified, the individual must have special knowledge, skill, experience, training or education sufficient to make it reasonable to rely on his testimony assuming it passes muster as to the other facets of the rule. This is a very low threshold and the expert does not have to be an "outstanding practitioner" in the field. *United States v. Barker*, 553 F.2d 1013, 1024 (6th Cir. 1977). An oft cited military case is *United States v. Garries*, 19 M.J. 845 (A.F.C.M.R. 1985). In *Garries* a detective was called as a blood stain expert. He had attended a course at the University of Colorado taught by a nationally recognized blood splatter expert and had been involved in 20-30 actual cases. The detective was held to have been properly qualified as an expert in the field. An example of a case rejecting an individual as an expert is *United States v. Carter*, 26 M.J. 428 (C.M.A. 1988). In *Carter*, admission of a CID agent's testimony that the victim exhibited responses similar to other rape victims was held to be error because he was not properly qualified in the field of rape trauma syndrome. In other words, mere familiarity is insufficient.

145. Mil. R. Evid. 403, *supra* notes 45 and 66. As noted in Saltzburg, Shinasi and Schlueter, "probative value involves a logical process of reasoning favored by the law. Prejudicial effect means some unwelcome influence on the logical process" Saltzburg, Shinasi and Schlueter, *supra* note 65, at 343.

presumption is in favor of admissibility. Furthermore, the judge will be granted a great deal of discretion in making his determination.¹⁴⁶ Many of the issues discussed above with regard to the Mil. R. Evid. 702 focus on these dangers are also relevant here. However, as pointed out above, Fed. R. Evid. 403 is, at least in the Third Circuit, considered to be a stricter standard than 702¹⁴⁷, a precedent military courts are likely to follow given the overall *Gipson* reliance on *Downing*. How and why it is different is not explained.¹⁴⁸ This imprecision is illustrated in *United States v. Howard*.¹⁴⁹ There the Coast Guard Court of Military Review considered the exclusion of polygraph results by the trial judge on the grounds the questions posed were ambiguous. It based its decision on both Mil. R. Evid. 403 and 702.¹⁵⁰ Given the subjective nature of the standards, future military courts are likely to follow suit.¹⁵¹

An Analytical Framework

It is clear that a *Gipson* analysis of novel scientific evidence is fraught with pitfalls. The primary problem is the lack of quantification and definition of the standards. Beyond adoption of a different standard¹⁵², little can be done to address this particular problem because the criteria chosen by the court inherently call for subjectivity. Therefore, practitioners must rely primarily on their advocacy skills during admissibility hearings and trust that judges will exercise their broad discretion wisely.¹⁵³

A more approachable problem is that the standard fails to offer a point by point catalogue of the issues the court will address. In other words, issues tend to repeat themselves in the guise of criteria for varying rules of evidence. For example, reliability is the subject of inquiry in both a Mil. R. Evid. 401 and a 702 analysis. The same is true of the Mil. R. Evid. 403 and 702 confusing, misleading or overwhelming dangers. Even accepting the court's articulated distinctions, the substantive elements of these two examples remain constant from rule to rule. Those distinctions that do exist are merely ones of degree. Nevertheless, the similarities permit proposal of a cohesive methodology for the practitioner that combines components of the various rules. Of course, combining common elements of different rules of evidence will not be responsive to the differences of degree asserted by both *Downing* and *Gipson*. However, in the absence of clear guidance as to what those differences

146. *United States v. Teeter*, 12 M.J. 716, 725 (A.C.M.R. 1981), citing *United States v. Dennis*, 625 F.2d 782 (8th Cir. 1980).

147. *United States v. Downing* 753 F.2d 1224, 1243 (3d Cir. 1985). See *supra* text accompanying note 62.

148. This is one excellent reason to seek special findings in all Mil. R. Evid. 403 rulings.

149. 24 M.J. 897 (C.G.C.M.R. 1987).

150. *Id.* at 906.

151. Mil. R. Evid. 403 does include mention of delay, waste of time and needless presentation of cumulative evidence. However, these issues of judicial economy are not unique to novel scientific evidence, and their handling will mirror that involved with non-scientific evidence. Indeed, these provisions are seldom invoked in situations involving scientific evidence.

152. In the face of an assertion that whatever standards might be chosen would, nevertheless, be incapable of quantification, the authors would suggest consideration of admissibility standards that differ based upon whether the evidence is inculpatory or exculpatory. One such approach, which would employ a beyond a reasonable doubt standard for prosecution evidence and a preponderance standard for defense evidence, has been outlined by Professor Giannelli. Giannelli, *supra* note 23, at 1249-1250. Another technique might be to apply the more stringent general acceptance test for inculpatory evidence and the relevance test for exculpatory evidence. Though such approaches would not solve the problem of lack of quantification, they would, to a much greater degree, place the risk where it should lie—with the prosecution. Acceptance of differing standards would, of course, tend to result in a greater number of acquittals than would be the case if both sides were subject to the same lower standard. However, as a policy matter, we should strive for a system in which the innocent defendant could present any evidence that might demonstrate that innocence. Similarly, we should create stringent safeguards against admission of evidence that might wrongly convict that same defendant. To argue that both sides have an inherent right to present evidence of the same quality is to reject the adage that we would rather a hundred guilty defendant go free than convict one innocent one.

153. It is certainly open to question whether "abuse of discretion" is an appropriate standard to use when dealing with exculpatory evidence, particularly when the evidence is of a scientific nature, but has not yet been generally accepted.

are, this point is, in practical terms, irrelevant. Judges will base their decisions on their own estimation of whether the standards have been met, citing the more restrictive rule in close cases. Although this analysis may sound overly cynical, in fact it is simply a recognition of the existence of judicial discretion.

In the aftermath of *Downing* and *Gipson*, certain areas of inquiry emerge that cut across the somewhat hazy process that would exist in a rule by rule analysis. The analytical framework set forth below is offered to help the practitioner organize his own approach to novel scientific evidence. It is suggested that no relevancy analysis would be complete without considering each of the following points:

- 1) To what extent does the witness qualify as an expert by virtue of his or her knowledge, skill, experience, training or education (Mil. R. Evid. 702)?
- 2) To what extent is the offered evidence connected or material to the fact in issue (Mil. R. Evid. 401 and 702 concerns)?
- 3) How valid are the principles underlying the technique used to generate the evidence (Mil. R. Evid. 401 and 702 concerns)?
- 4) How valid is the technique or process used to generate the evidence (Mil. R. Evid. 401 and 702 concerns)?
- 5) To what extent was the application of the process or technique as to this particular evidence and in this particular instance proper (Mil. R. Evid. 401 and 702 concerns)?
- 6) To what extent will admission of the evidence overwhelm, confuse or mislead the jury and what is the balance between these factors and the probative¹⁵⁴ value of the evidence (Mil. R. Evid. 401, 403 and 702 concerns)?
- 7) To what extent do concerns of judicial economy affect the balance in question six (Mil. R. Evid. 403)?
- 8) Can the evidence be excluded for constitutional and/or evidentiary rules or reasons beyond those set forth above?

It should be noted that with the exception of the final question, each poses an inquiry the answer to which must be placed along a continuum. This was purposefully done to emphasize the discretionary powers of the judiciary in this area. The practitioner must also realize that the answers to these questions will probably have a synergistic effect on the ultimate exercise of that discretion.¹⁵⁵ However, regardless of the way discretion plays itself out, a complete analysis of proffered novel scientific evidence must respond to each of these questions.

Finally, it is suggested that the relevancy approach provides fertile ground for argument that any problems with scientific evidence identified by the above analytical framework should go to the weight of the evidence, not its admissibility. As mentioned previously,¹⁵⁶ the assumption that jurors cannot deal critically with scientific evidence may be unwarranted, especially in courts-martial. In fact, jurors in a court-martial may actually be better able than the judge to assess some types of scientific evidence. With this in mind, an advocate might argue that the relevancy approach, with its less restrictive posture towards scientific evidence, demands that the jury be permitted to assign the appropriate weight to a piece of evidence, and that the judge should refuse to admit scientific evidence only under very rare circumstances.

154. The term "probative" is purposefully used here in contrast to the term "material" in question two. This is to indicate that the probativeness of evidence is the combination of the response to all the inquiries set forth in the previous questions.

155. For example, a judge might admit evidence where the application is somewhat questionable, but not do so in the case of other evidence in which similar questions arise as to application, because of additional questions concerning technique and principle.

156. See *supra* note 51.

Conclusion

From 1923 to the mid 1980s, the admissibility of scientific evidence in most courts of the United States, including courts-martial, was governed by the general acceptance standard. This standard required that the scientific principle and technique involved in the creation of a certain piece of evidence be generally accepted by the field to which the principle belonged. Recently, the relevancy approach, which appears to be far less restrictive, has been adopted by some federal courts and the military courts. Whether or not the relevancy approach actually will create a less restrictive atmosphere for the reception of scientific evidence in courts-martial remains to be seen. In adopting the relevancy approach, the Court of Military Appeals did not articulate clear, quantifiable standards for its application. While a degree of uncertainty exists with regard to the application of the relevancy approach, one thing is certain: as forensic science becomes increasingly more sophisticated, the standard will receive further critical attention and clearer standards will necessarily result.